Preventing the Medical Transmission of HIV in Zambia

GHS-I-00-03-00025-00, TASC2 IQC Task Order No. 1

Final Report of the Pilot Phase

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Submitted by:
Chemonics International Inc.

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This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc. in collaboration with JHPIEGO and The Manoff Group.

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ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
AD	Auto disables
ART	Anti-retroviral therapy
BCC	Behavior change communication
CBOH	Central Board of Health
CDC	Center for Disease Control
CGH	Chipata General Hospital
CHAZ	Churches Health Association of Zambia
CHW	Community health workers
CTO	Cognizant technical officer
CTS	Clinical training skills
DFID	British Department for International Development
DHMT	District Health Management Team
DHO	District Health Office
CSO	Central Statistics Office
DHMB	District Health Management Board
ECZ	Environmental Council Zambia
EHT	Environmental health technician
EPI	Expanded program of immunization
EU	European Union
GAVI	Global Alliance for Vaccines and Immunizations
GNC	General Nursing Council
GRZ	Government of the Republic of Zambia
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HCW	Health care worker
HIV	Human Immunodeficiency Virus
HLDHSSP	Health Services and Systems Program
HLD	High level disinfections
IEC	Information, education, and communication
IP	Infection prevention
IS	Injection safety
IUD	Intrauterine device
MOH	Ministry of Health
M&E	Monitoring and evaluation
MSL	Medical Stores limited
MTENR	Ministry of Tourism, Environment and Natural Resources
NCH	Ndola Central Hospital
NHC	Neighborhood health committees
NIPWG	National Infection Prevention Working Group
OSHA	Occupational Safety and Health Administration (USA)
PAC	Post-abortion care
PEP	Post-exposure prophylaxis

PEPFAR	President's Emergency Plan for AIDS Relief
PMTCT	Prevention of mother-to-child transmission
PHC	Primary health care
PHO	Provincial health office
PPE	Personal protective equipment
PQI	Performance quality improvement
RSV	Respiratory Syncitial Virus
SIGN	Safe Injection Global Network
ST TA	Short-term technical assistant
STI	Sexually transmitted infections
STD	Sexually transmitted diseases
TA	Technical assistance
TB	Tuberculosis bacilli
TBA	Traditional birth attendant
TIMS	Training information system
TOT	Training of trainers
TIPs	Trials of Improved Practices
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UTH	University Teaching Hospital
WHO	World Health Organization
DMED	Department of Medical Education
UNZA	University of Zambia
WHO	World Health Organization
ZANARA	Zambia National Response to HIV and AIDS
ZDHS	Zambia Demographic and Health Survey

EXECUTIVE SUMMARY

This report covers a 13-month pilot program for the Prevention of Medical Transmission in Ndola and Chipata, two selected, high-performing districts of Zambia. The program followed a 2000 WHO study that identified problems in infection prevention (IP) and injection safety (IS). The three organizations involved were Chemonics, The Manoff Group Inc., and JHPIEGO.

MAJOR ACTIVITIES

1. Baseline Assessment for Infection Prevention and Injection Safety
2. National Strategic Plan for Infection Prevention and Injection Safety
3. Advocacy and Behavior Change Communication Strategy
4. Pilot Project Activities in Two Districts
5. National Procurement System Assessment and Recommendations

Establishing a solid foundation for the next several years, the Prevention of Medical Transmission program in Ndola and Chipata districts started up rapidly and accelerated through the initial year. The program developed momentum as it increased awareness of the importance of infection prevention and injection safety.

The findings of the baseline assessment were widely disseminated and utilized for program planning and advocacy. The assessment demonstrated that activities undertaken by the government prior to the program had already begun to bear fruit. Since the 2001 safe injection study, there were apparent improvements in injection practices, knowledge and behaviors.

In addition, investments by the Global Access to Vaccines Initiative (GAVI) in Zambia expanded the immunization program and both sensitized providers of immunizations and provided essential commodities for immunization campaigns that were not otherwise available.

The assessment also identified persistent gaps in practice and behavior that must be addressed in order to minimize preventable transmission of blood-borne diseases, such as HIV and hepatitis B, in health care settings. The finding of most concern was the high number of providers who reported receiving a needle stick injury in the past 12 months (half of the interviewed providers in one district and almost two-thirds of the total providers).

Other gaps identified included: (1) a slight preference among clients for injections; (2) inadequacy of supply of purpose-made sharps boxes and the inadequacy of home-made sharps boxes (not particularly puncture proof); (3)

inadequacy and inconsistent supply of IP/IS safety commodities and equipment, in general; (4) poor segregation of waste at the point of origin; (5) inadequate disposal of contaminated wastes; and (6) indicators of poor overall quality of care (hand washing, interpersonal communications, etc.).

The assessment findings were incorporated in national advocacy activities, including the development of a national strategic plan for infection prevention, which incorporated injection safety and other measures to minimize transmission of HIV and other blood-borne diseases. The program re-activated and strengthened the existing national Infection Prevention Working Group (IPWG) and incorporated the following new key partners: Central Board of Health (CBOH), Ministry of Health (MOH), WHO, World Bank (ZANARA project), UNICEF, UNFPA, Environmental Council of Zambia, University Teaching Hospital, General Nursing Council and nursing schools, Chainama College of Health Sciences, Lusaka Dental School, the Defense Forces Medical Institution, Churches Health Association of Zambia, Private Practitioners Association, and the Traditional Practitioners Association.

In addition, the program supported ongoing activities of the IPWG, including completing the training of infection prevention specialists in every district in the country by supporting (technically and financially) training in the remaining provinces. This completed the national dissemination of the Zambian National Infection Prevention Guidelines launched in 2002, an important milestone for the IPWG that contributed to the sense of momentum and accomplishment within the group.

The baseline study also guided activities in the two pilot districts. A Performance and Quality Improvement (PQI) intervention used the baseline findings and health workers' own experiences and knowledge to identify IP/IS safety gaps to develop action plans for addressing the causes. Interventions included clinical training of providers, orientation of managers, formative research on behavior change, support for behavior change communication materials and interventions, strengthening of procurement and logistics management, and the provision of essential commodities and equipment. These efforts were supplemented by periodic supervision, monitoring and evaluation.

A core group of 58 health care workers completed an IP/IS safety-training course in the two districts, with a subset undergoing further clinical training to help build the capacity within the district and to maintain achievements made during the pilot phase. In second-generation training, the core group trained and oriented more than 400 additional health care providers, managers, and housekeeping staff in the two districts. In addition, orientation of more than 60 managers and supervisors helped motivate them to support IP activities. To a large extent, their support enabled the health providers to conduct these second-generation training programs and to take other actions, such as reinvigorating or establishing IP committees, instituting improved systems for segregation of medical wastes, and

introducing waterless antiseptic hand rubs to improve hand hygiene practices.

Further strengthening these efforts, a formative research process called Trials of Improved Practices (TIPs) supported one-on-one behavior change by working with providers on recognizing behavioral gaps (identified in the baseline) and negotiating action plans for improvement. Follow-up visits monitored and reinforced the specified behavioral changes.

In addition, community theatre and behavior change communication (BCC) materials targeted desired behaviors among both health providers and community members and clients. These materials were developed, tested, produced, and distributed in line with the program's National Injection Safety Behavior Change Communication Strategy.

The allocation of $300,000 for procurement of essential injection safety commodities and supplies resulted in a productive and beneficial and, above all, visible impact on the pilot sites:

- Apparent and verified shortages in safety supplies in the two pilot districts were reduced from roughly 50 percent to less that 20 percent and were, at times, eliminated.
- Well planned, phased and exceptionally quick procurements established a model for the CBOH and the districts for procurement implementation.
- Prioritized allocation of resources enabled the districts to target imminent needs and avoid the traditional stock-outs.

Above all, the procurement process and resulting access of the districts to essential safety commodities and equipment reinforced the importance of the IS program and the knowledge that, with proper planning and attention of forecasting information, shortages can be drastically reduced or totally eliminated.

Success in the pilot sites also contributed to the national advocacy efforts, as district managers discussed their programs with their colleagues and supervisors, and visiting dignitaries observed the benefits of the IS program. Indeed, the Minister of Health specifically highlighted this work in a television interview after a recent visit to Ndola.

The allocation of additional external resources for IS programs, supplies and commodities remains a high-priority initiative, as long as funding scarcity exists and other, important requirements are met. The pilot activities can and should be duplicated in other districts. In addition, to the extent possible, funds should be made available to reduce or eliminate the shortages in such commodities – at least on a short-term basis.

Evidence from the pilot projects shows that behavior change without commodity

support has little impact. At the same time, commodity support without effective behavioral intervention was not effective because initial commodity procurements did not automatically generate behavioral improvements until additional actions ensured that the commodities were appropriately used.

Finally, the best practices in the pilot districts and the subsequent expansion of the program to other districts can and should be used for building capacity within the MOH and the CBOH for continuing and implementing injection safety programs, after the existing program is completed.

SECTION I TASK ORDER ASSESSMENT ACTIVITIES

CONTENTS OF SECTION I

Overview

Zambia is among 15 nations identified in the President's Emergency Plan for AIDS Relief (PEPFAR) as priority countries for preventing the spread of HIV infections – in this case through preventable medical transmission. PEPFAR is intended to provide treatment to at least 2 million HIV-infected persons, prevent 7 million HIV infections, and provide care to 10 million individuals infected with or affected by HIV.

A priority activity under this effort is the elimination of preventable medical transmission of HIV (e.g., by improving the management and safety of blood supplies and specimens and increasing injection safety). The Zambia pilot program focuses on systems and practices related to infection prevention (IP),

injection preferences by patients, and injection safety (IS).

Transmission of HIV and hepatitis in the health care setting can occur through unsafe injections and other unsafe medical practices, including occupational exposure to blood. The persons most at risk of infection through unsafe injections are (1) the injection recipients; (2) health care workers through contaminated needles and syringes; and (3) the wider community through exposure to contaminated sharps waste. Estimates of the global burden of disease from unsafe injections suggested that in 2000, unsafe injections around the world accounted for 5 percent of HIV infections, 32 percent of hepatitis B virus infections, 40 percent of hepatitis C virus infections, 28 percent of liver cancers, and 24 percent of cirrhosis cases (World Health Organization, 2003). While such estimates have limitations, the data suggested that injection overuse and unsafe injection practices contribute to transmission of blood-borne diseases such as HIV and hepatitis.

A number of recent initiatives in Zambia have led to significant steps toward improved infection prevention (IP) and injection safety (IS) practices. The poor state of IP practices has been highlighted by a combination of field observations and data from studies, including a number of assessments (e.g., PAC, 1997-8; midwifery education, 1999-2000), the early rounds of hospital accreditation surveys (1998-2000), and an injection safety study (2001). Similar assessments confirmed that recurrent shortages in injection safety equipment and supplies exist throughout the country, at hospitals, district health care centers, and local dispensaries.

Major facts related to these chronic shortages include:

- Clear prioritization of essential drugs over safety products.
- Prioritization of treatment needs over infection prevention.
- Inadequate handwritten inventory control systems that fail to alert managers to forthcoming shortages.
- Inadequate attention paid to injection safety generating equally inadequate forecasts of requirements and projections of procurement needs.
- Procurement of injection safety equipment and supplies rarely linked directly to the procurement of medications, especially for curative needs.

A. Baseline Assessment

A1. Baseline Assessment of Injection Practices and Procurement

The 2001 WHO safe injection survey highlighted the poor state of injection practices in Zambia, reinforced by other data sources, pointing to substandard infection prevention practices. In this pilot program, the first step involved a

baseline, rapid assessment of the current state of practice, supported by the Government of the Republic of Zambia (GRZ) and its cooperating partners.

A2. Methodology

The data collected from five facilities in two districts helped to identify gaps in current injection safety practices and to guide IS intervention strategies. Given the current status and focus of the infection prevention program and known gaps, this assessment focused on the following areas:

- Staff infection prevention and injection safety practices, including incineration and waste disposal, in hospitals and health centers.
- Necessary supplies and equipment (e.g., syringes, sharps boxes, etc.).
- Community and patient knowledge.
- Attitudes and practices relevant to injection safety.

The assessment included (1) observation checklists to assess injection practices, waste handling inside clinics, and hands-free techniques; (2) interviews to assess knowledge, attitudes and practice of injection providers and prescribers; (3) a facility checklist for observing injection supply disposal, including incineration and burial; and (4) focus group guides and exit interviews, using tools adapted from the WHO SIGNS tools, to assess injection-related knowledge, attitudes and practices of members of the community.

The evaluation team, trained in the use of rapid assessment tools, included experienced health care providers, national representatives, and local interviewers familiar with the health facilities and local communities and languages.

With input from the Central Board of Health (CBOH), two districts were identified for the baseline assessment and, subsequently, to conduct pilot activities. In each of the districts, the provincial hospital and at least two urban and two rural health centers were selected for assessment sites. The team selected 11 facility sites, including seven urban/peri-urban and four rural sites. The evaluation team conducted 27 facility audits, made 45 observations of providers' injection practices, and interviewed 36 providers and 30 clients. It also conducted focus group discussions with 41 patients and community members in both districts.

B. Key Findings for Injection Safety

B1. Observations of Injection Safety

The baseline assessment showed a dramatic improvement in injection safety in the two districts between the 2001 WHO Injection Safety Assessment and the 2004 baseline assessment. This progress, in part, could be traced to a number of

infection prevention activities conducted during the period between the two assessments and the availability of excess supplies from a recent measles immunization campaign – supplies that are not normally readily available.

2001 WHO Assessment
95 percent of the health care providers used new needles.
14 percent of sites had sharps boxes available.
95 percent of the sites had potentially infectious dirty sharps.

2004 Baseline Assessment
100 percent of the health care providers used new needles.
89 percent of sites had sharps boxes available.
11 percent of the sites had potentially infectious dirty sharps.

The assessment, however, still identified significant gaps and knowledge in these two high-performing districts:

- A large number of needle stick injuries.
- A shortage of adequate sharps boxes.
- The use of homemade sharps boxes that were often overfilled.
- Only half of the injections were prepared on a clean tray or table.
- Swabs were clean and dry in only one third of instances.
- Poor practices were observed in the drawing of injections from multi-dose vials.
- Two-hand re-capping of needles was 50 percent in Ndola and 6 percent in Chipata.

Although there was an increase in the presence of sharps boxes, only the district health center maternal and child health services had available manufactured (cardboard) sharps boxes, which were obtained from the recent measles immunization campaign, but were not routinely available. The other areas within the district health centers and all the hospital areas employed homemade sharps boxes that were not necessarily puncture proof. In one of the two districts, more than a quarter of the sharps boxes were overfilled.

B2. Interviews with Injection Providers

Interviews with health providers also confirmed the continuing gaps in knowledge and unsafe practices despite the fact that nearly all providers mentioned HIV as a disease transmittable through unsafe injection. Hepatitis B virus (HBV) was mentioned by more than three-quarters of providers, although hepatitis C (HCV) was mentioned by only 10 percent .

Needle Sticks and Recapping: More than half the providers in Ndola district (50 percent recapping rate) reported having sustained a needle stick injury, whereas one quarter of providers in Chipata (6 percent recapping rate) reported a needle-

stick injury in the past 12 months. One provider in Chipata noted that re-capping had been abandoned because of the frequency of needle sticks.

Use of Sharps Boxes and Single-Use Syringes: Most providers reported using sharps boxes, and more than 75 percent reported sufficient quantities of sharps boxes. More than 90 percent reported having access to new single-use syringes, but they were not in the practice of removing, breaking or cutting needles before disposal. None of them reported re-sharpening, in contrast to the previous study's findings (2001: 40 percent).

Patients: More than two-thirds of providers reported that patients specifically requested injections. They also reported that, in general, patients did not bring their own injection equipment; however, new syringes were available for purchase in many communities.

B3. Interviews with Injection Prescribers

Injection prescribers, who see a high volume of patients per week, reported prescribing injections to only 15 percent of patients. Although half of prescribers reported that some patients request injections, similar to the rate injection providers noted, they did not normally provide injection prescriptions upon request. "Patients don't choose," according to the prescriber. "If they request, we advise what is best for them." Nearly all prescribers mentioned HIV and HBV as transmittable through unsafe injection, although only 25 percent mentioned HCV.

In both districts, the most common diseases treated with injections were pneumonia, malaria, sepsis and STIs. Medications most commonly injected by a nurse included x-pen, procaine, gentamycin and quinine.

B4. Status of Injection Facilities

Injection Safety and Waste Disposal: Although a large number of injections are being given in both districts – as high as 350 per week in one facility – only one facility had injection safety and waste disposal policies. In one district, some sharps boxes were found stored in the hospital and the hospital incinerator was used for waste disposal. Waste collection from health centers was done monthly.

Use of Sharps Boxes and Syringes: From both observation and provider interviews, the study found that syringes and needles were not reused and that for the most part sharps boxes were present. However, in the hospital and in the curative areas in health centers, the sharps boxes were frequently improvised, made out of cardboard, and were not puncture-proof. District health centers had manufactured sharps boxes left over from the last immunization (measles) campaign, which were present in the maternal and child health areas where immunizations are given. Although the majority of boxes were not overfilled, about one-quarter in one district were, and in one facility they were utilizing

plastic sharps boxes that were emptied every day and then reused. Only 24 percent of facilities had 10 or more sharps boxes in stock.

B5. Client Exit Interviews and Community Focus Groups

Confirmation of Information from Provider and Prescriber Interviews: For the most part, findings from the 11 focus groups and 30 client exit interviews reinforced each other and provided context for our findings from the injection observations and interviews with injection providers and prescribers. Community members and patients were also asked similar questions.

Perceptions Related to Injection Needs: When asked which diseases or symptoms required injections, the informants most frequently listed STDs, abscesses, pneumonia, skin rash and asthma. Others mentioned big cuts of the skin, seasonal rash, bleeding after birth, small pox, chicken pox and scabies. (It is worth noting that providers also mentioned most of these same diseases or symptoms.)

Reasons for Injection Preferences: The community members and patients reported having preferences for injections for some ailments because they believed that they work quickly and bring rapid improvement in health. The community members also said that the treatment is efficient because, unlike tablets, the patient does not risk forgetting to finish the course; as such, compliance is less of an issue. Although injections are more expensive, informants felt the expense was worth it. However, others noted that although injectables are preferred, they also require trips to the clinic.

Knowledge of Injection Procedures: Some informants provided details about the actual procedure used for injections. One informant noted, “When it comes to the administration of the injection itself, the area to be injected is cleaned with some clean cotton, which has methylated spirit; thereafter the injection is given and then the cotton wool is used again to prevent any likely bleeding. The needle and syringe then is thrown in some kind of a container with a small hole in the middle, immediately after use.”

Provider Decides on who Gets Injections: It was very clear that the provider decided who will and will not get an injection. This was similar to the quantitative findings. Informants said that at times they request injections, but at other times they leave it to the doctor’s discretion. Even if they might sometimes ask for injections, they respected doctors’ therapeutic rationale.

Understanding of Risks: The study found a fairly high level of understanding of the risks involved in injections and methods of avoiding risk. Clients believed that, if the providers use unclean needles, injections could spread diseases like HIV or abscesses. One informant said, “If the provider did not inject properly, injections can cause severe pain on the affected area and may end up

developing into abscess or a big wound." Others believed unnecessary injections posed other risks: "An injection becomes dangerous when the provider is not happy with you or is very tired."

Injections Outside Health Facilities: Informants were divided on the issue of receiving injections outside health facilities. Some said, "There are no people who receive injections at home rather than at the health facilities." Others described those who provided injection services in the community: "There are some people within the community who attend to patients for a charge. Some people choose these providers because of convenience, stocking of medicines not always found at the local health facilities, or attitude of the providers towards their patients." One person noted, "Only some of the community members seek treatment from these providers. Not all. Because their charges are exorbitant."

Observations of Waste Disposal: Informants reported that providers throw needles and syringes away immediately after use, and some said that they were burned in a pit afterward. Informants had not seen used syringes and needles around the clinic or used syringes lying around on tables and floors in the health facilities.

Suggestions for Improving Injection Practices: Informants provided several suggestions for improving injection practices: (1) having sufficient needles and syringes (to avoid patients getting them from market stands and grocers); (2) having sufficient amounts of oral drugs; (3) training providers so that there are no complications; (4) suggesting providers be gentle when administering the injection; and (5) asking that staff should be friendly to allay anxiety.

B6. Conclusions about Injection Safety

Based on the results from these assessments, it appears that the level of knowledge, attitudes and practices around injection safety are higher than they were in 2001. Provider awareness and, particularly, community knowledge about injection safety was quite high. Appropriate handling and disposal of injection equipment was also at a higher level than the team had anticipated.

However, there are areas that need continued attention and gaps to address in order to solidify the apparent gains that have been made. The most disturbing finding was the significant number of health providers in the two target districts who reported needle stick injuries within the past 12 months.

Where standard sharps boxes are not available, providers were adequately trained and motivated to manufacture their own sharps disposal boxes from cardboard cartons. While this is evidence of staff motivation to ensure that IS practices are followed, there is concern about the quality and safety of these homemade sharps disposal boxes. Also, the tendency to overfill sharps disposal boxes could be due either to a lack of understanding of the proper fill level or to

an effort to conserve on sharps boxes – or both. The ultimate disposal of sharps was also of concern. While the majority of sharps were burned, the security and adequacy of the burning or disposal sites were problem areas that the team observed.

There still exist client biases toward injections, and opportunities for improper injection usage in the community with private, informal and traditional providers will continue. In more rural areas, where education levels are lower and contact with health facilities is generally less frequent, community knowledge and practice may be worse than in the pilot districts.

Some of the positive results may have been influenced by the exceptional availability of the excess stock of sharps boxes – left over from the last round of the measles immunization campaign – in many district health centers. Given the recent development of National Infection Prevention Guidelines, the investments in infection prevention training under a number of programs (PAC, pre-service midwifery strengthening, etc.) and the attention and focus on HIV/AIDS, the project team attributes much of the progress observed to the purposeful work by the government and cooperating partners.

It is important to note is that these two districts are provincial capitals, which have benefited more from infection prevention work than other districts in the country. The selection of provincial capitals was made purposefully, both in order to identify remaining gaps in high-performing districts, as well as to closely link injection safety work with the expansion of HIV/AIDS clinical care. However, the project team recognizes this situation and expects to review all interventions with a view toward national applicability.

B7. Recommendations on Injection Practices

Several interventions are required to build on the recent improvements and to continue to improve the level and standard of injection safety in Zambia.

- Support the GRZ in actively promoting improved infection prevention, including injection safety, nationally.
- Address directly the provider practices noted to be weak, especially the recapping of needles.
- Integrate overall infection prevention and injection safety standards into all relevant pre-service and in-service training, quality assurance, and supportive supervision programs and initiatives.
- Identify opportunities to reduce the number of injections by reviewing the national drug formulary, procurement and distribution patterns for injectable and oral medications, and clinical practices.
- Consider replacing injectables with other formulations to help reinforce the idea of limiting the use of injectables to only necessary injections.
- Continue to ensure that adequate stocks of single-use disposable, auto-

disable, or safety injection equipment are routinely available.
- Continue to provide adequate sharps disposal containers.
- Disseminate and reinforce clear guidelines on waste disposal facilities, including incineration and burial, or alternative disposal systems, as well as the protection of disposal sites.
- Continue to reinforce and strengthen client and community knowledge about injection safety.

C. Assessment of National Procurement System

C1. Overview

The procurements that were undertaken and the conditions leading to the requirements of supplies and commodities, their procurement and distribution were confined to the two pilot projects. It is likely, however, that similar conditions exist in Zambia's other 70 health districts. Meetings and interviews with key stakeholders confirm this and provided the team with an overview of the national procurement system and major issues faced at each level of the system.

The recurring shortages of injection safety equipment and commodities can be traced to four distinct management elements:

- The low priority of these commodities on the requirements list of the allocating agency, the CBOH. Attributable, with justification, to the consistent and unmet demand for funding of essential drugs, safety supplies and equipment get a secondary consideration.
- The inadequate forecasting of requirements. Requirements are still often measured as a response to immediate demand. There was no system in place to reliably forecast forthcoming needs and possible shortfalls.
- The records on usage, consumption, inventories, etc., are incomplete or inadequate. This was true both at the CBOH and the district health center level. As treatment and patient response are priorities, record-keeping and verification are secondary. Because inventory records at the district level were kept manually, there was no appropriate mechanism to track arrivals, inventories in stock and distribution.
- The often cumbersome procurement process at the CBOH did not guarantee proper arrival of commodities, while the inventory and distribution system of the Central Medical Stores did not assure prompt, safe, and complete deliveries to the district health centers.

C2. Central Board of Health

Although staffed by a competent stable of procurement managers, the CBOH procurement system is burdened by bureaucratic constraints. Modeled after the cumbersome WHO and World Bank procurement systems, CBOH procurements

are lengthy, inflexible and slow. Added to this is the foolproof but problematical system of managing allocation and procurements through committees, which virtually guarantee further delays and a lack of flexibility in responding to requirements.

The CBOH entrusted the storage and distribution of drugs and medical supplies to the Central Medical Stores. This well-intentioned but problem-prone set-up did little to assure proper inventory management and control and prompt and targeted distribution. To its credit, the CHOB recognized this problem and engaged the services of Crown Agents to put in place its superlative inventory control and distribution system.

The necessary changes call for a simplified and tailored procurement system, not unlike the USAID system, which by many years of wear and tear has developed into a customer-friendly, compliant and, above all, speedy procurement mechanism. Clearly, to become effective, the procurement system should abandon the committee system as a decision-making tool and allow key managers to make decisions. A series of hands-on training programs for key managers in a U.S. or other response-oriented, supply chain organization would be highly desirable.

C3. District Operations

The districts were not, in general, engaged in procurements. The role of the District Health Management Teams (plus, second- and third-level hospitals that fall outside of the DHMT management and budget) is to determine requirements and place requests or orders with the CBOH. Small amounts of purchases may be conducted directly by the district hospitals. However, with the exception of the level-three hospitals (such as university teaching hospitals), these are truly small amounts (less than 4 percent of the district budgets) and usually executed in response to emergencies. In such cases, the common use items needed for injection safety work could be bought at local pharmaceutical stores in the major population centers. As such, there are no needed improvements in the procurements.

Clear and present requirements exist for adequate requirements forecasting and verification. As the district centers submit their needs to the CBOH, these requirements should be in the form of long-range forecasts, based on verified usage, consumption and stock data. There is a need to support and build the capacity of the district-level managers in this area and to introduce systems that simplify the process and increase the accuracy and quality of the work.

C4. Health Centers

Local health centers are not involved in the procurement process. As such, the only requirement for them is to accurately and systematically report consumption

and usage and stock levels. Reporting was not done on a systematic basis, and the District Health Management Teams should introduce a simple management process to meet this need.

D. Procurement Baseline in Ndola and Chipata.

D1. Findings

The baseline assessment revealed problems in several areas of the procurement and distribution systems. They were addressed separately, as key elements in the program.

- **Low Priority of Funding of Safety Supplies:** Although safety is recognized as a problem, most of the limited MOH financial resources are allocated for the procurement of essential drugs, relegating safety procurement to a secondary priority. In both Ndola and Chipata districts, injection safety supplies hovered at the 50 percent satisfaction mark, with the districts attempting to bridge the gaps from their own inadequate financial resources.
- **Questionable Allocations Based on Unreliable Data:** With even best intentions, the CBOH, which is responsible for allocating health service funds, did not have reliable or verifiable data on the availability, use and inventory of injection safety equipment and supplies. Consequently, it was unable to make valid decisions on the priorities of various districts, and some allocations may or may not have been appropriate.
- **Inadequate Supplies and Intermittent Stock-outs:** The combination of inadequate forecasting and lowered priorities resulted in inadequate supplies and intermittent stock-outs in various commodity categories. This situation was particularly noticeable in the case of waste disposal implements, such as sharps boxes.
- **Bureaucratic CBOH Procurement Process:** The procurement process, adopted from WHO and World Bank systems, relies on a committee-based approval process. This approach tends to stifle invention and innovation and hampers efficiency and speed. Consequently, timelines are not met, decisions are not made, and procurements are delayed.
- **Inadequate Record-keeping System:** Pilot districts collate requirements in a haphazard manner, and managers have been unable to verify the accuracy of stated requirements. Inventory records, which are kept manually, are not coordinated with the records of the local dispensaries. As such, while there may have been knowledge of actual stocks in the warehouses, no such stock data was available for sub-district centers.

A detailed review confirmed factors that contributed to recurrent and, indeed, dangerous stock-outs in the districts.

D2. Action Plan for Procurement System

Based on these findings, the project team developed a detailed procurement plan, which was based on the following action points:

- **Project Team Established New Procurement System:** As the CBOH procurement system does not provide a responsive and time-conscious delivery of requisite supplies, it was decided that procurements would be undertaken by the project team. Accordingly, a tailored, customer-friendly procurement system was set up to accommodate the needs of the two pilot districts with speed and efficiency.
- **Funds Earmarked and Commodity List Drawn Up:** On the basis of the initial assessments, a list of requisite commodities and equipment was established. Funds were earmarked for each district, according their specific needs, with an understanding that additional procurement would be implemented upon reviewing the use of the first deliveries.
- **Local Vendors Used:** As a further enhancement of efficiency, and as local availabilities of requisite supplies were verified, it was decided to buy all of the commodities from established local vendors.

SECTION II NATIONAL ACTIVITIES

CONTENTS OF SECTION II

A. National Strategic Plan for Infection Prevention and Injection Safety

A1. Strengthening of Infection Prevention Working Group

In 2002, the Central Board of Health (CBOH) established a national Infection Prevention Working Group (IPWG) under the Directorate of Clinical Care and Diagnostic Services, largely as an outgrowth of actions by two other bodies:

- The National Post-Abortion Care Task Force began expanding PAC services to all the provincial hospitals in the country in 2000, with a strong component of infection prevention. In this process, they took the following actions: (1) reviewed IP practices at all provincial hospitals, and (2) delivered on-site training and strengthening activities, including the orientation of all Provincial Health Offices (PHO) and hospital management teams.
- The General Nursing Council acted in 2000 to: (1) revise and strengthen midwifery and nursing education and (2) strengthen the IP component in the nursing curriculum, teaching materials, and clinical practice sites.

In 2002, the IPWG reviewed the existing data on IP practices and cumulative field experience and then initiated the following actions:

- Development of a strategy to strengthen IP practices through a process of guideline development and dissemination.

- Development of the Zambia's National Infection Prevention Guidelines, which incorporate the principles of injection safety, in October 2003.
- National dissemination of these guidelines and district-level capacity building.

After the initiation of the Prevention of Medical Transmission of HIV project, the Chemonics team worked with CBOH to support the IPWG and to strengthen injection safety within the overall IP framework. The project now acts as the secretariat for the working group with Dr. Velepi Mtonga, director of Clinical Care and Diagnostic Services at CBOH, as chairperson for the monthly IPWG meetings at the project office. The working group includes representatives from:

- CBOH/MOH
- WHO
- UNICEF
- Environmental Council of Zambia (ECZ)
- Zambia National Response to HIV and AIDS (ZANARA, a World Bank program)
- University Teaching Hospital
- Expanded Program on Immunization (EPI)
- UNFPA
- JHPIEGO
- National Post-abortion Care Task Force
- Dental school
- Defense Forces Medical institutions
- Churches' Health Association of Zambia (POSSESSIVE?)
- Private Practitioners Association
- Traditional Practitioners Association
- General Nursing Council
- Several nursing schools
- Prevention of Medical Transmission team members.

A2. Publishing and Distribution of National IP Standards and Guidelines

In 2003, CBOH, with technical assistance from JHPIEGO, published the National Infection Prevention Standards and Guidelines, which are adapted from international standards to fit the local environment. Designed to prevent infections in a health service delivery setting, these guidelines have been distributed to all the provincial and district health offices during routine IP training sessions in sufficient quantities for distribution to all health facilities in Zambia.

The IPWG embarked on a dissemination of the guidelines, conducting clinical training in infection prevention targeting at least two IP specialists from each district in the country, to build some core infection prevention capacity locally. These IP specialists were expected to support further training and dissemination

of the guidelines within their respective districts. While this effort was initiated prior to the beginning of the Prevention of Medical Transmission program, and six of the nine provinces had been covered, the program provided technical and financial support to complete this dissemination and ensure that 61 additional providers were trained in infection prevention, including injection safety. Members of the project team helped to conduct the training in Southern Province (18 providers), and the program both funded and provided technical assistance to complete the last two training initiatives in the Northwestern Province (22 providers) and Western Province (21 providers).

A3. Draft of the National Strategy to Improve IP/IS Practices

The new draft of the National Strategic Plan for Infection Prevention (2005-2007), one of the required deliverables for USAID, built upon the Zambia Infection Prevention Guidelines and provided a framework and strategy for strengthening IP practices in Zambia. The plan was designed to provide a cost-effective and sustainable IP program in order to eliminate the transmission of infections in health service delivery. It supports the government's interest in a comprehensive approach to infection prevention, while ensuring that aspects such as injection safety are well and thoroughly represented.

In finalizing the draft, the project staff, along with the IPWG, utilized experience from the pilot programs and incorporated comments made by USAID and other stakeholders. This document outlined all currently feasible and technically sound IP practices applicable at all levels of the health care delivery system in Zambia. The team was assisted by Linda Tietjen, JHPIEGO IP specialist.

This draft document has been circulated to the key stakeholders, and a workshop was scheduled for March 31, 2005, to gain consensus on the strategy, implementation plan, and budget.

A4. Review of National Clinical Protocols and Essential Drug Formulary

The project team and consultants reviewed the new 2004 National Clinical Protocols from the National Formulary Committee, including the essential drugs list, and found few areas where there was clear room to make changes that would improve injection safety. In most cases, the list included the proper oral medications that should be available. In a few cases, such as the use of oxytocin for active management of the third stage of labor, it may be possible to consider an alternative oral medication, such as misoprostol. (JHPIEGO has conducted studies that demonstrated the safety and efficacy of misoprostol for this use, but it is still a relatively new approach).

The team also initiated contact with the Antibiotic Association of Zambia, which is working to prevent overuse of antibiotics (the most common curative injections

given) and to combat the development of antibiotic resistance.

The major area for improvement in prescription practices lies in changing provider decision-making behaviors and procurement. This opportunity arises from three factors: (1) the slight preference by consumers for injections; (2) their willingness to accept the decision of the health provider; and (3) communication barriers that prevent consumers from asking for oral medications when injectables are prescribed. (Although oral medications may be included on essential drug lists, they may not routinely be available at medical facilities.)

B. Advocacy and BCC Strategy

B1. Development of Advocacy Strategy

Based on a 2004 analysis of the baseline survey report, a new advocacy strategy was developed and focused on identification of potential changes in key behaviors, perceptions, attitudes and knowledge in the following groups:

- **Health providers (prescribers or injection givers):** (1) poor prescribing habits; (2) unsafe preparation and administration of injections; and (3) poor and unsafe disposal of all used injection equipment and safety boxes.
- **Community agents** (Neighborhood Health Committee members, community health workers, traditional birth attendants, local non-governmental and community based organizations): (1) inability to monitor the disposal of medical wastes and report the problems to relevant authorities; (2) inability to encourage community members to avoid unnecessary injections; and (3) inability to educate community members on the dangers of unsafe injections.
- **Patients, caretakers and community members:** (1) inappropriate requests for injections; (2) acceptance of health provider recommendations without questioning; and (3) self-medication, i.e. patients providing their own injections.
- **Policy-makers, administrators, health managers**: (1) not providing the necessary material, financial, and human resources for injection safety; (2) not effectively managing infection prevention and injection safety program; (3) not ensuring protection of disposal sites.

The project team drafted the BCC strategy with input from stakeholders and from Mike Favin, the BCC technical advisor from Manoff Group Inc., who also advised on development of the communication strategy and materials and planning for the concept testing with community members in one rural district.

To further modify the BCC strategy and messages, the concept testing was followed by Trials of Improved Practices (TIPs) formative research (July-August

2004). This approach involved one-on-one observation and interaction with selected providers and community members. They identified specific sub-optimal behaviors, agreed on an improvement plan, and a follow-up visit to measure improvement of recommended behaviors by providers and community members.

B2. Advocacy for Decision-makers

The advocacy plan involved national, provincial and district levels. At the national level, the IPWG met with CBOH and targeted individuals and organizations for potential participation in the IPWG. Membership more than doubled during this phase of the project.

At provincial and district levels, the advocacy channels included team meetings with managers throughout the pilot phase and specific orientation sessions conducted at pilots sites. These meetings increased IS awareness by (1) providing findings of the baseline survey; (2) orientation on management of medical wastes; (3) encouragement of timely procurement and supply of logistics; and (4) sensitization of District Health Management Teams (DHMT) and hospital management to plan and budget for injection safety commodities and activities.

B3. Behavior Change Communication (BCC) Approaches and Materials

In this advocacy effort, the project utilized training and a broad array of communications materials to target key stakeholders.

Training: Using project communications materials, clinical training of health care providers focused on the BCC process, common resistance to change, audience analysis, and information, education and communication (IEC) material development

Communication Materials and Activities:

- For Health Facilities: **Stickers** placed in appropriate places in health facilities with reminders to providers about hand washing, use of the safety box, treatment of needle prick, proper injection preparation, and safe injection administration.
- For Prescribers and Providers: **Leaflets** on injection safety summarizing key desirable behaviors and the rationale.
- For Schools: **Posters** for schools (focusing on avoiding medical waste) and health facilities.
- For the Community: **Community dramas** motivating people to avoid unnecessary injections, to discuss injection safety with provider, and to report any dangerous medical wastes in the community.
- For CHWs, TBAs, and Local Organizations: **Orientation booklets** to

increase awareness of injection risks, ways to support injection safety, and education of community members.
- For District Policy-makers: **Advocacy fact sheet** to increase awareness of poor injection safety risks and ways to support injection safety.

The project's injection safety team checked message accuracy. Revised concepts were again reviewed by two audiences: (1) health care providers during orientation meetings and the clinical training sessions in both Chipata and Ndola; and (2) community members during group discussions during the TIPs survey. Draft materials were tested for:

- Commanding attention
- Clarity of the message
- Communicating a benefit
- Consistency in the message
- Creation of trust
- Catering to the heart and head
- Call to action.

After final revisions, materials were revised on the basis of the pre-test, and materials were produced for distribution at the pilot sites. Orientation meetings at each pilot site covered the following: target audience, purpose of the materials, and how they should be used.

B4. Review and Revision of National Advocacy and BCC Strategy

During a three-day meeting, the Chemonics team and UNICEF, WHO, ZIHP, CBOH, and MOH reviewed the draft BCC strategy, which was based on key behavioral gaps identified during the baseline survey. The strategy contained a behavior analysis component and a strategy for addressing the problem behaviors. The BCC strategy was finalized after including partner suggestions and comments from other stakeholders.

C. Roll-Out of National IP/IS Plan

IP working group meetings were organized to share the lessons learned on unsafe infection practices in the two pilot districts. Based on findings from the baseline assessment, PQI activities, TIPs, and clinical training, the senior health managers have been oriented regarding the gaps on unsafe injection practices. The team shared written reports with CBOH/MOH, and held frequent meetings to gain feedback from provincial and district level managers.

This investment enabled the IPWG to incorporate the lessons learned, experiences and approaches of the Prevention of Medical Transmission of HIV

program into the National Infection Prevention Strategic Plan.

SECTION III PILOT ACTIVITIES IN TWO DISTRICTS

CONTENTS OF SECTION III

A. Field Test of Project Design and Implementation

Utilizing the findings from the baseline assessment, the project team designed activities at Ndola and Chipata districts with a performance and quality improvement approach (PQI). This approach included integrated a variety of methods to closing performance gaps:

- Orientation of health managers
- Facility/provider Performance Quality Improvement (PQI) workshops
- IP/IS clinical training of health care
- Formative research approaches, such as trials of improved practices (TIPs)
- BCC activities (community drama, IEC materials, etc.)
- Strengthening of commodity procurement and distribution systems
- Provision of essential commodities

Follow up visits and supportive supervision were carried out in order to sustain, improve and maintain the quality of care. Tools were also designed for on going monitoring and evaluation, which have been incorporated by CBOH/MOH in their routine program monitoring system.

A1. Performance Quality Improvement (PQI) Training for Health Care Providers

June-July 2004

Two four-day workshop trained health providers from both pilot districts in Performance and Quality Improvement (PQI), which is a process for achieving both institutional and individual results--in other words, provision of high quality, sustainable health services. The process considers the institutional context, describes the desired performance, identifies gaps between desired and actual performance, identifies root causes, selects and designs interventions to close the gaps, and measures changes in performance.

Through highly interactive methods, participants covered the relevance of injection safety and infection prevention in Zambia and results of the baseline survey. They discussed behaviors that were peculiar to each district, along with PQI concepts, change management, vision, leadership, and stakeholder strategies for behavioral and performance change. Some of the identified obstacles to achieving quality in the districts included lack of manpower, inadequate resources, lack of motivation, poor work attitudes, and lack of in-service training systems to update staff.

They also reviewed the assessment tool already tested in Malawi for measuring IP standards, which included the following technical units: administrative functions; casualty, surgical and medical wards; central sterilization and supply department; labor and delivery areas; laboratory; MCH and family planning, and patient /client education.

At the end of the training, they developed action plans for their own institutions, such as large hospitals, District Health Management Teams, medium health facilities, and smaller health facilities. The participants shared strategies for introducing action plans to their respective work places.

During the workshop, the following items were identified as common PQI gaps identified: (1) inadequate hand washing, (2) lack of proper policies and standards in most institutions, (3) no one responsible for monitoring IP/IS, (4) support staff omitted in IP trainings, (5) staff not vaccinated to prevent infections, especially HBV virus, and no prophylaxis for personnel with needle pricks.

A2. 2nd Generation IP/IS Training for Additional Cadres

Following the Performance Quality Improvement (PQI) training, providers returned to the two districts and conducted orientation and IP training in their respective institutions. The additional cadres trained included the following:

Ndola Central Hospital
7 orientations (March to December 2004)
189 providers (doctors, nurses, paramedics, ward sisters, matrons)
The IP committee also conducted on-the-job training as they moved from department to department.

Arthur Davison Hospital
2 orientations, 3 other sessions (October-November 2004)
44 providers (doctors, nurses, paramedics), 50 housekeeping staff

Chipata General Hospital
Orientation, several other sessions (October 2004)
36 providers using On The Job training.
Additional sessions for housekeeping staff

The Prevention of Medical Transmission team provided technical support to the local district teams, as requested, but the leadership and initiative for these trainings came from the managers and providers themselves.

A3. IS/IP Clinical Training for Health Care Providers
September-October 2004

In the two districts, a total of 58 health providers attended 10-day clinical workshops that emphasized basic IP knowledge, BCC, and procurement. With special emphasis on the gaps identified in the baseline study and the TIPs surveys, the methodology included lectures, observation site visits, presenter demonstrations, and participant demonstrations. In simulated clinical settings, they were evaluated on skills competency. The 58 participants (32, Ndola; 26, Chipata) learned about the following:

- Injection safety
- Standard precautions
- Hand hygiene
- Preparation of chlorine solution for decontamination and personal protective equipment
- Safe practices in the operating room
- Waste management
- Disposal and separation of sharps
- Decontamination and cleaning
- Sterilization and high level disinfection (HLD)

- Preparation of and how to use a safety box
- Preparation and giving of an injection
- How to use multi dose vials
- Preparation and insertion of IV
- Clinical laboratory services
- Blood bank and transfusion services

Health providers identified several issues of concern: (1) misuse of personal protective equipment (PPE) such as gloves, aprons and gowns, and (2) domestic staff members (maids, cleaners, etc.) who have no proper protective clothing while handling infectious waste. Participants were challenged to raise these issues in their action plans and discuss them with their respective institutions.

A4. Site Visits and On-site Training

Sites visits helped the health providers, who completed project training, identify gaps in their respective work environments and appreciate the importance of waste segregation. During visits to municipal council dumping sites, they observed a mixture of domestic and medical waste (Petri dishes, needles and syringes), lack of a grader to bury the waste, and numerous people involved in scavenging who were at risk of infection. The primary learning from this experience was, as follows:

- Importance of separating waste from the point of use.
- Encapsulate or burn sharps before disposal if incineration is not possible.
- Importance of personal protective clothing (PPE) for all levels of the system.

Participants developed and presented action plans and increased their average class scores from 66 percent to 91 percent in Ndola and 61 percent to 95 percent in Chipata, based on pre-and post-questionnaires, skill competency tests, and the use of checklists.

A5. Supervision and Follow Up of Pilot Project Activities

To assess improvement in the IP and IS practices, supervision and follow-up activities took place through facility site visits, interviews with providers and managers, and focus group discussions community members. Visits were made to hospitals, district health centers, provincial health office, district health management teams, and waste disposal sites. Checklists helped assess the performance of health care providers and the behavior of community members, as well as logistics and procurement supplies.

At the end of this process, the team formed two conclusions: (1) supervisory and supportive visits helped in the follow up of the IS safety programs and in addressing any issues that arose and (2) health providers are ready to adopt the

good practices, but they require additional logistics support.

Interviews with Providers
Interviews with providers covered history of needle-stick injury, knowledge of diseases that can be transmitted by unsafe injections, review of vaccinations for hepatitis B, and provision of Personal Protective Equipment (PPE) for the health support staff.

Interviews with Community Members
Exit interviews and focus group discussions took place with community members during community-based activities, and discussions were also held with traditional healers.

Checks on Logistics and Procurement
The team also assessed the logistics and supply chain management at each health care facility. They made the following findings:

- Failures in the internal institution logistics systems.
- Insufficient government budget allocations for purchase of commodities.
- Inadequate knowledge of IP/IS practices in some health providers and support staff.
- A fairly high level of understanding exists in the community regarding the risks associated with injections, such as abscesses or acquisition of HIV/AIDS.
- Injections given in the homes of some traditional healers.

After the facility assessments, the team made the following recommendations:

- Improve the internal institutional logistics system, planning skills and strengthening the accountability systems.
- Continue on the job training of the appropriate IP/IS practices.

In addition, reporting on a field visit to Ndola in December 2004, Dr. Kuhu Maitra, Chemonics' technical manager, made the following comments:

- The Zambian government, in general, expressed satisfaction with the injection safety program and activities.
- Shortages were reduced and supplies made readily available.
- Good practices had been adopted and new techniques incorporated in the current practices of health care providers.
- Hospital management had been oriented as to how procurements for IP/IS practices need to be carried out.
- A general improvement in the IP/IS practices among the health providers was noted, such that even IP committees had been formed at some of the hospitals and health centers.

The CTO, USAID Zambia, Dr. D. Kasungami, visited Chipata in December 2004

and noted that the project was generally accepted by the pilot site administration, and the health care facilities appreciated the contributions to the improvement of quality care of the patients. However, some administrators did not know the implementation costs of the program. (such as the costs of injection safety equipment and supplies.) Dr. Kasungami recommended that the injection safety team needed to do more sensitization and encouragement of on-site training.

A6. Findings and Recommendations

Findings

- The internal institution logistics systems were failing.
- The government budget for the purchase of commodities was insufficient.
- There was inadequate knowledge of IP/IS practices among some health providers, as well as support staff.
- The communities have a fairly high level of understanding of the risks associated with injections, such as potential formation of abscesses and risk of acquiring HIV/AIDS.
- Some traditional healers give injections in their homes.

Recommendations

- Improve the internal institutional logistics system, enhance planning skills and strengthen accountability systems.
- Increase on-the-job training for appropriate IP/IS practices.

A7. IS Orientation and Advocacy for Senior Managers
October-November 2004

The project conducted injection safety orientation programs for 62 senior managers from all levels (34 managers in Ndola; 28, Chipata). They were drawn from the Provincial Health Office (PHO), the District Health Management Team (DHMT) and the hospitals in the respective districts (Ndola Central Hospital, Arthur Davison Children's Hospital in Ndola, Chipata General Hospital, and Mwami Adventist Mission Hospital In Chipata). The managers included executive directors, senior nursing managers, ward or unit managers, doctors, lecturers, senior clinical officers, environmental health technicians and pharmacists.

The training was designed to inform and motivate them on key IP/IS points, to identify their respective roles in this effort, and discuss support for sustainability. The course covered:

- Background on the Prevention of Medical Transmission project.
- Key aspects of infection prevention and injection safety.
- Findings of the baseline and trials of improved practices (TIPs) survey.
- Findings of the procurement survey.

- Ways to improve future procurement requests.
- Update on project activities.
- Feedback on the BCC materials.
- Review of the action plans for their institutions, as drawn up by health providers who participated in the PQI and clinical skill training courses.

Outcome of the orientation of managers was measured as follows:

- Managers actively helped in implementation of the action plans for injection safety in their respective institutions.
- Hospital management personnel became aware of existing gaps and established systems to improve procurement and logistics.
- Senior Nursing Managers improved the recording system.
- Better collaboration between the procurement and logistics units.
- Infection prevention unit was strengthened at Ndola Central Hospital.
- Focal persons to strengthen IP/IS practices were identified..
- Managers set their priorities in terms of procurement considerations.
- IP/IS has been incorporated in the nursing curriculum.

A8. Clinical Training Skills Course for Health Care Providers
January 2005

The project held a Clinical Training Skills Course to train trainers from among the health care providers, including eight from Ndola, six from Chipata, and one project team staff. They were trained to deliver competency-based clinical skills courses for other service providers.

Based on adult education principles, the course emphasized **doing,** not just knowing, and used competency-based evaluation of performance. The training consisted of (1) standardization of clinical skills and knowledge, (2) training skills, and (3) practice in conducting clinical training. By the end of the training course, the participant were expected to be able to:

- Apply a competency-based, participatory and humanistic approach to clinical skills training.
- Plan a clinical training course.
- Plan, establish and maintain a positive learning climate.
- Prepare and use audiovisual aids.
- Deliver interactive presentations.
- Evaluate knowledge and skill acquisition using competency-based assessment instruments.
- Develop clinical skills through demonstrations and coaching.
- Conduct a clinical skills training course for service providers.

An important feature involved the video taping of participants delivering training sessions (illustrated lectures, demonstrations, clinical coaching, etc.) followed by

feedback from their peers and the trainers.

A9. Behavior Changes Reducing the Frequency of Unnecessary Injections

This component of BCC was not assessed during the pilot phase since the materials were developed and distributed at a later stage.

B. Procurement and Distribution

B1. Assessment Phase

Immediately upon award of the contract, Chemonics conducted a review to determine stock levels, usage and consumption rates, available GRZ and CBOH support, and district level “wish lists. Chemonics prioritized and finalized requirements and verified the information through available district-generated data.

The project team compiled a list of needed IP/IS equipment and supplies, which served as the basis for the first phase of procurements. . The project team worked with local district authorities to develop a reliable list of injection safety supplies, which prioritized items where stock-outs have occurred. The list was based on assessment of existing and continuous needs, available stocks and stock-out data.

B2. Procurement Phases

Initially, the procurement was divided into two phases. The first phase involved the use of approximately $100,000 in the two districts to purchase urgently needed items in short supply, as prioritized on the assessment list.

This procurement was launched at once, with deliveries anticipated in mid-May 2004. Skilful procurement techniques and close attention to actual requirements enabled the Procurement Manager to reduce this amount to $68,000. It was recognized that to retain full flexibility and responsiveness to program needs, procurements would have to be adjusted as usage is assessed and new requirements are identified. Consequently, the second-phase procurements and subsequent procurement phases were set up, timed, and based on verified usage and requirements. This resulted in four major procurement tranches for a total of $265,000. Careful husbanding of resources throughout the project permitted, near the end of the project, the use of an additional $100,000 for a final resupply of necessary commodities.

Procurements were conducted under USAID procurement regulations, with careful attention to good commercial practices. Informal solicitation was

authorized because purchases were to be in several separate tranches and the value of any single transaction was not anticipated to exceed $100,000. FDA approvals were not required because no drugs were purchased under the project.

Code 935 authorization was granted to the project. Nevertheless, since there is a Cuban supplier presence in the manufacture of medical supplies in Zambia, care was given to the strict observance of nationality authorization. In view of the presence of qualified local vendors, procurements were conducted in Zambia only.

Purchasing Implementation Steps

On the basis of the prioritized assessment list, the Procurement Manager prepared a request for proposals. The RFP included:

- Item specification and numbers required
- A requirement that prices be quoted in U.S. dollars
- A deadline for submission of offers
- Source/origin/nationality certification requirements
- An offer validity requirement
- An identified delivery site
- Notification that the basis of delivery will be C&F project site and/or JHPIEGO offices
- A requisite delivery date
- Payment information (including the need for an executed receiving report)
- A requirement for a 3-month, no-cost replacement warranty

The Senior Procurement Advisor approved the RFP language and format prior to issuance, and the RFP was transmitted informally to selected, recognized vendors of medical supplies, both in Lusaka and in Ndola.

Proposals received prior to deadline were logged and opened; no formal opening was required. Offers received after the stated deadline were returned to the suppliers. After reviewing the proposals, the Procurement Manager recommended selected suppliers, based on responsiveness, responsibility, and cost. Justification was required for proposing an award when awarding a contract to a vendor who did not submit the lowest bid. Negotiation with selected suppliers took place, as authorized and instructed by the Senior Procurement Advisor.

The Senior Procurement Advisor approved the proposed awards and informed the Procurement Manager in Lusaka in writing, who then issued purchase orders to the selected suppliers and transmitted them to the vendors.

B3. Design of Procurement System

With well-designed and efficient procedures, the program introduced a carefully phased procurement process, whereby stocks were acquired periodically on the basis of verified usage and consumption. This method resulted in four separate, well-timed procurement actions, meeting needs as they occurred and eliminating excessive, unused and damage-prone accumulation on stocks.

B4. Delivery of Supplies

A rapid, well-tailored procurement allowed the purchase and delivery of supplies and commodities within a 30-day period to the district health centers. This quick, responsive action alleviated most of the stock-outs and served as a model for subsequent forecasting and procurement.

The project team facilitated and ensured quick distribution of the supplies and commodities to the DHMT and hospitals and eliminated reliance on the cumbersome distribution process of the Central Medical Stores. The local vendors who supplied the commodities and, in some cases, the project team members actually delivered the goods to the district centers. The districts provided onward distribution to local health care centers.

As suppliers delivered the goods to the JHPIEGO facility or the district health care offices, the procurement manager executed a receiving report or requested one from the district offices. The reports would show the following:

- The number of items received.
- The condition of goods received.
- The results of random inspection of content.

A copy of the receiving report was attached to the request for payment and transmitted to the paying office for action.

B5. Technical Training

District and local health care center managers were trained in forecasting, inventory management, usage and consumption data collection, needs assessment, and follow-up concepts. Virtual elimination of stock-outs, improved planning, and periodic verification of usage and availabilities resulted from providing a computer and printer to both district health centers for district inventory maintenance and control.

To monitor system problems, the team also conducted spot checks to offer technical assistance and provide the assessment tools for tracking the movement

of supplies.

B6. Follow-Up and Monitoring

In addition to the team spot checks, the Procurement Manager in Lusaka provided follow up by (1) ensuring capacity building and monitoring procurement at the pilot sites and (2) formulating assessment forms to help managers monitor stock movements in the institutions and identify and address problems. She monitored delivery and followed up on orders placed, through site visits and telephone contacts and made several verification visits to each district.

Because the delivery phase is a crucial and vital element of forecasting, considerable effort was spent in obtaining valid data and in evaluating the effectiveness of the support provided, as well as the end use and the proper application of the limited availabilities. The team conducted periodic visits to district offices to monitor inventory controls, usage, and disposal.

After verifying specific information requirements, the team made recommendations for proper supply management, inventory control and resource allocation.

B7. Coordination with Other Donors

Following up USAID's suggestion to integrate the successful procurement approach into other donor or USAID activities, the Chemonics Senior Procurement Advisor met with several donors to assess the feasibility and/or application of these practices in their programs.

The meetings revealed that, while a number of technical assistance efforts are under way, actual procurement implementation has not been approached by these organizations. Therefore, a coordinated approach to improve the effectiveness of CBOH and the best use of limited assistance funds could have beneficial effects. All agreed that the introduction and application of the Chemonics procurement process could significantly shorten and improve the existing procurement flow.

The organizations involved were the British Department for International Development (DFID), the GRZ's Central Medical Stores, Crown Agents, Management Sciences for Health, and the USAID bilateral Health Services and Systems Program (HSSP).

Review and assessment of the second-phase procurement implementation served as a basis for drafting a National Plan for Medical Transmission Safety.

PROCUREMENT TIMELINE

The original procurement timeline was modified, repeatedly, to respond to procurement needs. This flexibility enabled the districts to receive an uninterrupted supply of needed commodities**.** The final schedule is given, as follows**:**

March 15-19, 2004: Assessment of CBOH and district (Ndola) procurement capabilities (Senior Procurement Advisor).

March 21-28: Assessment visit to Chipata (Procurement Manager).

April 1: Procurement list is prepared in the form of a request for proposals and transmitted to the Senior Procurement Advisor for approval.

April 5: RFP is approved and Procurement Manager is instructed to issue RFP to selected vendors, with an April 14 submission deadline and a May 14 delivery requirement.

April 16: Procurement Manager completes evaluation and recommends awards to the senior procurement advisor.

April 19: Senior Procurement Advisor approves awards and instructs the Procurement Manager to issue purchase orders.

April 21: Purchase orders are issued and delivered to vendors.

May 14: Deliveries take place.

July 1: Inventory and consumption are verified at district level.

August 1: Requests for second-phase procurements are received. Procurement is processed, as above.

October 1: Requests for third phase procurements are received. Procurement is processed, as above.

December 1: Requests for fourth phase procurements are received. Procurement is processed, as above.

March 1: Requests are compiled for final resupply initiative. Procurement is conducted on an expedited basis.

Inventory and usage is verified at district level, bi-monthly. Findings are used to evaluate new requests.

SECTION IV PROJECT MANAGEMENT

CONTENTS OF SECTION IV

A. Team Organization and Management

As the prime contractor, Chemonics took responsibility for performance and contractual compliance with the task order, as well as for leading the procurement activities. The other partners held responsibilities, as follows:

- JHPIEGO: Technical lead for day-to-day field activities and interventions that were carried out nationally and in the two pilot districts.
- Manoff: Technical support to the BCC and advocacy strategy.

Chemonics regularly communicated with the Washington USAID office on the progress of the project, while JHPIEGO Country Director Rick Hughes communicated regularly with the USAID Zambia Mission staff. The Chemonics home office staff and the field team conducted weekly telephone conversations and exchanged weekly e-mails to discuss progress and challenges of the project.

In June 2004, USAID organized a meeting in Washington for the three partners to discuss progress and the national strategy to improve IP/IS practices in Zambia. Country Director Rick Hughes participated by conference call.

In addition, Chemonics, JHPIEGO and the Manoff home office staff participated in quarterly meetings with other USAID-funded IS partners to share lessons learned and best practices in different countries.

B. Procurement Management

Procurement activities, which were closely coordinated at all relevant steps, with overall program activities, resulted in unusual implementation efficiency and real measurable impact in improving injection safety practices. Some elements of this coordinated management concept are outlined below.

The Senior Procurement Advisor from Chemonics managed procurements and

procurement-related activities, including preparing the initial baseline assessment and designing of a flexible, streamlined, country-specific procurement process for the project. Local procurement implementation and related tasks were in the hands of an exceptionally competent, part-time Procurement Manager, based in Lusaka.

The Procurement Manager took responsibility for managing and implementing the entire solicitation, evaluation, and award process, as well as performing periodic end use verification and forecasting chores. Close cooperation of this manager with the district health care centers and the CBOH enabled her to affirm, with accuracy, future needs and to revise procurement amounts and types as needed.

The Senior Procurement Advisor approved contract awards, based on a careful evaluation of offers, recommendations of the Procurement Manager, and relevance of the intended purchases to project objectives. This process allowed for unusually speedy resolution of procurement issues and resulted in unprecedented, quick and efficient deliveries.

This close coordination by all the project team members resulted in an ingenious improvement on project implementation, as recorded in the “Lessons Learned” section. The project was also able to give district health care managers brief, but targeted overviews of procurement issues during the technical training initiatives in Ndola and Chipata. This added knowledge enabled these managers to take into account in their forecasts and requirements planning the actual procurement timelines, delivery problems, and other procurement issues.

The Senior Procurement Advisor made three oversight visits to Zambia to verify full compliance with applicable USAID regulations and good commercial practices, as well as to review operations and provide management guidance. The visits enabled the Advisor to meet with other donors, the CBOH staff, and USAID officials to review ongoing activities and to seek integration of best practices in each other’s programs. In addition, weekly telephone conferences with the Procurement Manager in Lusaka resolved problems and assured the timely implementation of specific procurement related tasks.

C. Start-Up Activities

In mid-March 2004, a start-up workshop oriented project team members to the task order and clarified roles and responsibilities. This workshop was followed by three days of intensive work planning exercise and development of baseline tools with advice from JHPIEGO Monitoring and Evaluation specialist Linda Fogarty and Technical Director Kuhu Maitra. An assessment was then conducted in the two pilot districts.

In April 2004, Senior Procurement Advisor, Bendy Viragh made an assessment of procurement needs and processes, including visits to CBOH management offices, Central Medical Stores in Lusaka, and the health care center in Ndola. Based upon this quick--but high impact--assessment, the team drew up a procurement list of priority supplies and equipment, which began the actual procurement process. Procurement implementation was entrusted to Procurement Manager Matilda Zyambo in Lusaka, who arranged the solicitation and evaluation of offers and recommended awards. As a result of this quick start-up, commodities were received, distributed, and put to use within 60 days of project initiation.

D. Staffing

Home Office Staff

Chemonics

- Technical Director – Dr. Kuhu Maitra
- Procurement Advisor – Bendy Viragh
- Project Manager – Ana Luisa Ralston
- Project Associate – Kristie McComb

JHPIEGO

- Program Manager – Galina Stolarsky
- Financial Advisor – Howard Linaburg
- Monitoring and Evaluation Advisor – Linda Fogarty
- Infection Prevention Specialist – Linda Tietjen
- Performance Quality Improvement (PQI) Specialist – Kama Garrison

The Manoff Group Inc.

- Technical Advisor – Mike Favin
- Financial - Mickey – Vanden Bossche

Field Office/Lusaka

Country Director:	Mr. Richard Hughes, JHPIEGO
Project Director:	Dr. Christopher Mazimba, JHPIEGO
Project Coordinator:	Mrs. Martha Thiri Ndhlovu, JHPIEGO
BCC Coordinator	Mr. Answell Chipukuma, Manoff
Procurement Manager	Mrs. Maltildah M. Zyambo, Chemonics

SECTION V MONITORING AND EVALUATION

CONTENTS OF SECTION V

A. Overview

In addition to periodic supportive supervision visits during the 11-month period, the project injection safety team twice monitored pilot sites in order to assess the IP program impact on the pilot sites, compared with the March 2004 situation during the baseline survey. They evaluated areas of improvement, challenges, and lessons learned. The teams, which averaged six persons per district, also included representatives from CBOH, the hospitals, and the provincial and district health offices.

The Districts Health Management Teams (DHMTs) conducted routine quarterly monitoring and evaluation activities of the health centers, which are supervised by the provincial health offices and sometimes the central level.

During the monitoring activity, the team visited four hospitals (Ndola Central Hospital, Arthur Davison Hospital, Chipata General Hospital and Mwami Mission Hospital) and 32 health centers. A total number of 79 facilities and departments were assessed, which included hospital wards, health centres, storerooms, pharmacies and disposal sites. The teams interviewed a total of 149 health providers (75 in Ndola and 74 in Chipata), of which 48 were observed preparing and administering injections to clients.

Based on baseline assessment, several interventions were required to build on the infection prevention and injection safety practices including procurement systems. These interventions included the following:

- Procuring additional supplies according to pilot site requirement while accountability measures were put in place to monitor the usage of the supplies and improve their management.
- Facilitating the government's ongoing dissemination and implementation of the Zambia National Infection Prevention Guidelines.
- Strengthening providers' practices (e.g. to eliminate recapping of needles, improve injection preparation techniques, and reinforce immediate disposal of sharps).
- Minimizing the use of injections by substituting other formulations where possible.

- Improving the quality and quantity of sharps disposal boxes, and reinforcing their proper use (e.g., not over-filling).
- Ensuring waste disposal guidelines are up-to-date, available and implemented (e.g., proper and protected disposal sites, incinerator usage, etc.).
- Minimizing client bias toward injections, through behavior change communication.

B. Findings

B1. Findings on Procurement and Distribution

During the baseline survey in both districts, the program team noted that medical supplies were centrally procured by Central Board of Health, using the World Bank guidelines. Although transparent, this centralized system does not allow end users to suggest preferences, especially when funds are inadequate.

The baseline survey confirmed that, in Ndola, the stock of most items fell below 50 percent and the absence of tools, such as computers, hampered accountability efforts. While the stock in Chipata was slightly better at slightly above 50 percent , the district still needed assistance in terms of supplies. The injection safety team conducted training and provided IS commodities and a computer. The current assessment shows that there are currently adequate supplies of all injection safety supplies:

- After delivery of additional supplies, district stocks were 79 percent in Ndola and 84 percent in Chipata.
- Ninety percent (54 of 60) of respondents reported no stock-outs of needles and syringes in their facilities since the inception of the project.
- Seventy-five percent (41 of 54) of the bulk stores and storerooms possessed bin cards on all stocks in the health facilities, a situation that previously did not exist.
- Ninety percent (53 of 60) of the facilities assessed possessed adequate, purpose-made safety boxes in all areas where injections are given. In the baseline survey, sharps boxes were available and used for immediate disposal in the vast majority of cases (89 percent and 73 percent , respectively), many boxes were made from local materials (cardboard boxes) that were not puncture proof, and they were frequently filled beyond three-quarters full. Where pre-fabricated sharps boxes existed, they reportedly were leftover stock from the previous measles immunization campaign.
- Eighty-four percent of the requisitions from the wards are now recorded on formal requisition documents. Sixty-eight percent of staff interviewed were happy with the services of the procurement unit, and they are involved in deciding what to procure from their impress funds. Ninety-six percent (53

of 55) of the respondents reported that the supplies are readily available at the point of use.

B2. Findings on IP/IS Practices

During the final monitoring and evaluation in March 2005, significant improvement in the IP/IS practices was noted in all centers:

- None of the facilities had overflowing, pierced, or open sharps containers inside facilities, compared with 10 to 25 percent or more in Chipata and Ndola in previous assessments.
- A reduction down to 3 percent from 11 percent during the baseline survey in observed sharps waste in open containers, tables, floors, or other places that exposed staff to needle stick injuries.
- An improvement in observations of needles left stuck on the lid of multi dose vials, a habit that needs more attention. The documented observations dropped to 16 percent (8 of 51) from 56 percent during the baseline survey.
- Hand washing, although not observed during the baseline assessment, was evaluated at 10 percent in the initial TIPs visit and 71 percent in the final evaluation.
- Acceptance of the waterless handrub for hand hygiene improved to 50 percent, a practice that was only introduced after the second procurement.
- Active and functional IP/IS committees were documented by written minutes in 60 percent of the centers (39 of 56), a situation that did not exist during the baseline survey.

Areas for Improvement

Supplies: Despite project support, some supplies, such as chlorine for decontamination, remain insufficient. Seventy-seven percent (37 of 48) of the facilities inspected reported stock outs of chlorine.

Recordkeeping: Recordkeeping is also an issue. Fifty-eight percent of the bin cards are not updated on a daily basis, with stocks not corresponding to records. Record keeping will require more supervision and training on the management of stocks.

Health Provider Behaviors: Improvement is still needed in IS practices. Twenty-five percent of providers still prepared injections in unclean and inappropriate environments, dropping from 51 percent during the baseline survey.

Waste Disposal: Waste disposal continues to be a major issue, putting both the cleaning staff and communities at risk. Some centers are still disposing sharps openly, with the sharps occasionally being neither well

burnt or incinerated.

Personal Protective Equipment (PPE): Almost all centers have inadequate personal protective equipment for the daily cleaning staff.

Staff Vaccinations: Most health staff members are not vaccinated against hepatitis B, and only 8.7 percent (13 of 149) of health providers have received HBV vaccination.

Post-Exposure Prophylaxis: In case of an accidental exposure, post-exposure prophylaxis is not routinely available.

IP Guidelines: The national infection prevention guidelines need to be reinforced by additional on-site and on-the-job training in most centres, and the guidelines should be available and used at all health facilities.

In summary, from the assessment findings, the project is viable, effective, and its objectives were achieved. Continued support can further add to the positive results, and to other activities not undertaken during the pilot program (e.g., HBV vaccination, PEP, alternative waste disposal systems) could be added for greater prevention of HIV medical transmission).

SECTION VI CONCLUSIONS

A. Achievements

1. **Infection Prevention/ Injection Safety**. The project efforts resulted in broad acknowledgement that infection prevention and injection safety are priority areas that need to be addressed in order to improve the quality of care.

2. **Budget Allocations.** District Health Management Teams and the hospitals at district level in the two pilot districts have now incorporated required commodities for IP/IS practices in their respective budget allocations.

3. **Infection Prevention Working Group.** Strengthening of IPWG led to members taking the initiative to create awareness of the need for IP/IS practices at teaching institutions, such as UTH and Arthur Davison Hospital.

4. **Best Practices at Ndola Central Hospital.** After the Performance Quality Improvement (PQI) workshop at Ndola Central Hospital, the district established an effective infection prevention committee, and added two full time nurses managing the unit. The senior nurse attends the management meetings and has been influential in the implementation of IP practices. The IP focal nurse and her team have educated the staff members in various departments, where the staff members successfully demonstrated their knowledge during the project team site visit. Through the IP committee, they have made investments and improvements, such as purchasing some Personal Protective Equipment (gowns, boots, aprons, and utility gloves for staff). The hospital has purchased bin trolleys, which it uses to collect clinical waste. The hospital now has two types of refuse bags, black and green, with the black bags for domestic waste and the green bags for clinical waste.

5. **Infection Prevention Committees.** Infection Prevention Committees were established at all health institutions in the pilot districts.

6. **Infection Prevention and Injection Safety.** Health care providers, who were trained during the pilot phase, are now able to differentiate between safe and unsafe practices in both infection prevention and injection safety issues. They have now become advocates of safe practices.

7. **Hygienic Measures.** All providers now carry a waterless, antiseptic hand rub solution that facilitates prevention of infection after seeing each

patient. This advance greatly improved hand hygiene practices and eliminated inadequate hand washing facilities, especially during clinic sessions, ward rounds, etc.

8. **Waste Segregation.** After receiving instruction about the methods of segregating health care wastes at the point of generation, the hospitals and health centers have introduced a color-coding system for bin liners to differentiate clinical and non-clinical waste. In addition, management of disposal sites has been improved through fencing and construction of appropriate placenta pits and dumping pits.

9. **Forecasting**. Through carefully formulated, hands-on training initiatives, the project introduced a systematic and coordinated effort to gather usage and consumption data, keep meticulous inventory records, and compile significant, timely and reliable short and medium term forecasting of actual requirements. This highly successful effort resulted not only in real "forecasting" of needs, but also procurements and deliveries made in a timely and cost effective manner. Previously, as the initial assessment noted, forecasting at both at the CBOH and district levels was haphazard, inadequate, and unreliable.

10. **Inventory Records.** New equipment enabled the districts to maintain adequate and reliable inventory data, and to carefully monitor usage, requirements, and disposal needs. The project bought computers and printers for both warehouses and delivered them to the health care centers. Previously, inventory records at both the Ndola and Chipata health care centers were maintained through handwritten entries in a ledger. While the effort was commendable, the results denied managers access to up-to-date information on stocks, usage and depletion, and distribution. It also made it difficult to stay on top of expiration time schedules.

11. **Simplified Procurement Process.** Based on USAID's informal solicitation rules, the project introduced a modified, streamlined, and pro-active procurement process that requires the active participation of the intended recipients. Previously, the struggle with the cumbersome WHO and World Bank procurement procedures resulted in delayed and overly costly purchases made under these rules. This process cut procurement time to a third of the existing system' s timeline, thereby generating efficiency, speed and cost savings. The process has been introduced to the districts and may eventually be incorporated in CBOH's operations.

B. Lessons Learned

1. **CBOH/MOH Support.** Central level support and ownership of the IP/IS program is crucial for successful implementation of the program. Each

activity undertaken under this project was coordinated and guided by central level officials, via administrative letters and visits by key officials..

2. **Infection Prevention Working Group (IPWG).** Based on the initial assessments and ongoing follow up visits, the working group members were committed and enthusiastic about incorporating injection safety as a component of the infection prevention effort, and its potential impact on the health of both health providers and the community. Involvement of members from other organizations, such as the Environmental Council of Zambia, ZANARA project, Institute of Waste Management, etc. has helped to make a more active and better functioning IPWG.

3. **Involvement of Key Stakeholders**. From the beginning, stakeholders such as UNICEF, WHO, National Food and Nutrition Commission, ZIHP/HSSP, CBOH, DHMT, and others were included in the development process. This involvement led to the acceptability of key documents and strategies, including the BCC strategy. Now, partners are willing to distribute and disseminate the BCC materials in their respective areas of project implementation.

4. **Donor Involvement at National Level.** Since each donor has its own mechanism of funding the projects, it was difficult to involve other donors in the same project.

5. **Focal Points at Provincial and District Level**. It is important to identify a focal person at each province and districts, who will be in charge of leading the effort to coordinate IP/IS activities.

6. **Neighborhood Health Committee**. Involvement of this committee facilitated the spread of the IP/IS messages. The community results included digging of pits for waste disposal, fencing the dumping sites, assisting to build incinerators, health education to other community members on the dangers of health care waste, and risks of unsafe injection practices.

7. **Improving Quality of Safe Injection Practices.** Essential to improve the quality of services is (1) the training of senior mangers, health providers, procurement officers, and the community, (2) information on behavior change communication, including BCC material, and (3) availability of the required commodity supplies.

8. **Procurement Training.** By combining technical training with segments of procurement, health care managers became aware of many issues that impact on the availability and delivery of needed items. It also made them aware of the absolute need for reliable reporting of needs and requirements planning.

9. **Staggered Procurements.** As usage data from the first procurement was digested, subsequent procurement phases were planned with reasonable accuracy and in strict conformance to anticipated needs. This type of staggered procurements, responding to the ever changing requirements of the health care centers, made it possible to execute procurements that were in direct response to needs and reduced waste and idle stock levels. As such, considerable sums were saved. .

10. **Assistance to Host Country Managers.** The procurement managers in the pilot districts were introduced to models of streamlined and flexible hands-on procurement concepts, conducted under the client-friendly USAID rules. This enabled them to incorporate efficiency short cuts in their procurement work.

C. Reports and Deliverables

This report documents the deliverables for the pilot project that has been carried out in the 11-month action plan with a no-cost, two-month extension. The report describes the approach used to achieve a number of deliverables, including procurement, baseline and TIPs surveys, Performance Quality Improvement workshops, clinical training, orientation of managers, IPWG meetings, TOT Clinical Skills course, BCC strategy and materials development, and a final draft of the National Strategic Plan For Infection Prevention, which covers injection safety.

The following reports have been prepared and submitted:

Deliverables

- Work Plan and Procurement Plan (1 March 2004 – 31 January 2005)
- Baseline Assessment and Discussion Paper.
- Draft National Strategy to Improve Infection Prevention Practices and Injection Safety in Zambia.

Reports

- Planning BCC Activities, June 14- 21, 2004.
- BCC strategy, June 16, 2004.
- Trials of improved practices (TIPs), July to August 2004.
- Performance quality improvement, June 21-26, 2004 in Ndola and June 28-July1, 2004, in Chipata.
- Clinical training in injection safety, September 6-17, 2004, in Ndola and September 9-27, 2004, in Chipata.
- Orientation of health managers to injection safety issues, October 14, 2004, in Ndola and November 16, 2004, in Chipata.

- Training of Trainers Clinical Skills course for both Ndola and Chipata health providers, January 12-22, January 2005.
- Procurement – hand-over reports of injection safety supplies procured by the project, October 2004 to February 2005.

ANNEX A

Baseline Tools

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

A. Injection Provider Observation Checklist

Greetings! We are working to understand how injections are used. I would like to observe how you give injections. The information collected will be recorded anonymously and I will not write your name on this form.

II. FILL ONLY ONE FORM FOR EACH INJECTION PROVIDER		Yes	No
	A. OBSERVATION OF INJECTION PROCEDURE		
1	Injection is prepared on a clean designated table or tray where blood or body fluid contamination is unlikely[1]		
2	Purpose of the injection:	1 – curative 2 – immunization 3 – other	
	(**If other)** Specify:		
3	Swab used for skin preparation is dirty, bloodstained or kept wet		
4	Uses new, single-use syringe and needle OR sterilizable syringe and needle sterile according to Time Steam Temperature (TST) spot indicator[2]		
5	Type of syringe used:	1 – AD 2 – single-use 3 – sterilize able	
6	**(If single-use)**, trademark and country of manufacture of the syringe:		
7	Patient brought his/her own syringe and needle for the injection		
8	Needle is removed from vaccine/vial between injections		
9	**(if glass ampoules are used)** A clean barrier is used **(**e.g. small gauze pad) to protect fingers when breaking the top from the glass ampoule		
10	Two-hands re-capping of the needle after the injection		
11	(**for disposable or AD syringes)** Syringes are collected in a puncture-proof safety container immediately after the injection		
12	(**for sterlizeable syringes)** Syringes and needles are flushed, solution is drawn up into syringe, soaked 10 minutes, disassembled and dropped into bowl containing enough water to cover them.		
	OBSERVATION OF INJECTION AREA		
13	Puncture-proof safety container is available		
14	Dirty sharps are present in place where they expose health care workers to needle stick injuries *(take pictures)*		
15	(**if puncture-proof container is available)** Container is full or overfilled		
	Comments:		

[1] Not an area also used for procedures that may lead to blood contamination (e.g., blood sampling, wound dressing, etc.)
[2] If reuse of injection equipment is about to occur without sterilization, intervene to interrupt the procedures as tactfully as possible and a "N" should be marked on the checklist.

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

B. Injection Provider Interview

Greetings! We are working to understand how injections are used. I would like to ask you a few questions. Please feel free not to answer if you don't wish. The information collected will be recorded anonymously and I will not write your name on this form.

1	How many injections do you give in one day?	_____Inj/day
2	Do you currently have stocks of new, single-use syringes and needles in your facility or at a nearby public or community pharmacy?	1 – Yes 2 – No 3 – Don't know
3	(**if no sharps box observed)** Do you use sharps boxes?	1 – Yes 2 – No 3 – Don't know
4	Do you have sufficient quantities of sharps boxes to dispose of sharps safely?	1 – Yes 2 – No 3 – Don't know
Comments:		
5	When do you dispose of your sharps box?	
6	How are sharps waste disposed of in your health care facility?	1 - open incineration 2 - protected incineration 3 - incinerator 4 - burial in a pit 5 - dumping (regular trash) 6 - other
Comments:		
7	Do patients provide their own injection equipment for **immunizations**?	1 – Yes 2 – No 3 – Don't know
8	Do patients provide their own injection equipment for **therapeutic** injections?	1 – Yes 2 – No 3 – Don't know
9	Are new, disposable syringes and needles available for purchase in this community?	1 – Yes 2 – No 3 – Don't know
10	Do you use needle removers or needle cutters before disposing of injection equipment?	1 – Yes 2 – No 3 – Don't know
11[3]	What kind of medications do patients prefer when they present at an outpatient clinic with a febrile illness?	1 - injections 2 - oral/other non injectables 3 - either 9 - don't know
Comments:		
12	Do patients ask you specifically to provide injections?	1 – Yes 2 – No 3 – Don't know
13	(**if so)** Do you provide injections to those who request them?	1 – Yes 2 – No 3 – Don't know
14	Could you name diseases that may be transmitted through unsafe injections?	1 – HIV 2 – HCV 3 – HBV 4 – others

[3] Questions in shaded area (#11-14) are asked to both Injection Providers and Injection Prescribers.

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

	Others: List:	
15	How many needle stick injuries have you had during the last a. month b. 3 months c. 12 months	 _____Injuries _____Injuries _____Injuries
16	Do you re-sharpen needles after a certain number of injections or when blunt?	1 – Yes 2 – No 3 – Don't know

Comments:

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

C. Injection Prescriber Interview

Greetings! As we are working here to understand how injections are used, I would like to ask you a few questions about how you prescribe injections. The information I will collect will be recorded anonymously and I will not write your name on this form. As we go through the form, please feel free not to answer if you don't wish to give additional information.

1	How many outpatients do you usually see during an average week	_____Patients
2	Of these, for how many would you usually make a prescription that includes at least one injection?	_____Patients
3	For those to whom you prescribe at least one injection, how many injections on average would the total treatment typically include?	_____Injections
4	What are the three diseases for which you prescribe an injection most often? 1. 2. 3.	
Comments:		
5	What are the three injectable medications that you prescribe most often? 1. 2. 3.	
Comments:		
6	When you prescribe an injection, who usually gives the injection to the patients? (one or more answers)	
Comments:		
7[4]	What kind of medications do patients prefer when they present at an outpatient clinic with a febrile illness? (*read choices 1-3)*	1 - injections 2 - oral/other non injectables 3 - either 9 - don't know
Comments:		
8	Do patients ask you specifically to provide injections?	1 – Yes 2 – No 3 – Don't know
9	(**if so)** Do you provide injections to those who request them?	1 – Yes 2 – No 3 – Don't know
10	Do you think that you prescribe too many injections?	1 – Yes 2 – No 3 – Don't know
11	Could you name diseases that may be transmitted through unsafe injections	1 – HIV 2 – HCV 3 – HBV 4 – others
Others: List:		

Add: Cadre, Qualification, Position

[4] Questions in shaded area (7-11) are asked of both Injection Providers and Injection Prescribers

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

D: Supervisor Interview and Facility Audit

Greetings! We are working to understand how injections are used. I would like to observe how you give injections. The information collected will be recorded anonymously and I will not write your name on this form.

Interview						
Do you have a copy of the injection safety policy/recommendations issued by your health services? [ask to see a copy]	1-yes		2-no		3-don't know	4-n/a
Do you have a copy of the safe sharps and health care waste disposal policy issued by your health services? [ask to see a copy]	1-yes		2-no		3-don't know	4-n/a
How many injections are given per week on average in your facility?	_____Immunizations/week				_____other injections/wk	
For dispoable or AD equipment:						
In the last year, how long in total have you been out of new, disposable or AD syringes and needles?	Never		< 1 month		>3 months	Don't know
In the last year, how long in total have you been out of puncture-proof sharps containers?	Never		< 1 month		>3 months	Don't know
Are stocks of vaccines always delivered with matching quantities of injection equipment?	1-yes		2-no		3-don't know	4- no vaccinations
Are stocks of vaccines always delivered with matching quantities of puncture-proof sharp containers?	1-yes		2-no		3-don't know	4- no vaccinations
For sterilizable equipment:						
When was the steam sterilizer seal/gasket last changed?	< 1 mo	1-6 mos	6-12 mos	> 1 year	5- Don't know	6-N/A
When was the steam sterilizer safety valve last changed?	< 1 mo	1-6 mos	6-12 mos	> 1 year	5- Don't know	6-N/A
When was the steam sterilizer pressure valve last changed?	< 1 mo	1-6 mos	6-12 mos	> 1 year	5- Don't know	6-N/A

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

In the last year, how long in total have you been out of kerosene?	Never		< 1 month		>3 months		Don't know	
Facility Audit								
Reuse of syringes or needles in this facility for **immunization injections**	1-yes		2-no		3-don't know			
Reuse of syringes or needles in this facility for **curative injections**	1-yes		2-no		3-don't know			
If yes, sterilization methods available (circle all that apply)	1-steam sterilizer		2-boiling		3-both		4-other (specify)	
If pressure sterilizer used in this facility								
Number of steam pressure sterilizers routinely in use	Single rack		Double rack		Triple rack			
Absence of leaks in routinely used sterilizers	1-yes		2-no		3-cannot be assessed			
Number of spare sterilizer **seals** available	Number of seals _____				cannot be assessed			
Number of spare sterilizer **safety valves** available	Number of valves _____				cannot be assessed			
Number of spare sterilizer **pressure valves** available	Number of valves _____				cannot be assessed			
Presence of a complete, updated register for logging TST spot indicators	1-yes		2-no		3-cannot be assessed			
Presence of a functioning heater(s) for steam pressure sterilizer(s) in the facility	1-yes		2-no		3-cannot be assessed			
Number of complete sterilizeable injection equipment kits	Number of kit A _____		Number of kit B _____		3-cannot be assessed			
Presence of swabs used for skin preparation that are dirty, bloodstained or kept wet	1-yes		2-no		3-cannot be assessed			
Number of puncture-proof safety containers (safety boxes) in stock	0	1-4	5-9	10-20	=20	Cannot be assessed		
Presence of safety boxes in areas where injections are given	1-yes		2-no		3-no safety boxes			
Presence of overflowing, pierced, or open sharp box(es)	1-yes		2-no		3-no safety boxes			

Adapted from WHO SIGNS tools 2001, 2002

Facility _____ Cadre_____
Ward _____ Position_____
Date_____ Qualification_____

Number of full sharps box(es) waiting for disposal/incineration stored easily	Number present _____			
Number of full sharps box(es) waiting for disposal/incineration stored in unsupervised fashion	Number present _____			
Sharps in plastic bottles, or open containers exposing staff to needle-stick injuries	1-yes	2-no	3-cannot be assessed	
Presence of used sharps in the immediate surroundings of the health center and/or the disposal site	1-yes	2-no	3-cannot be assessed	
Type of waste disposal facility used for the disposal of the majority of sharps (circle only one)	1-open burning on the ground 2-open burning in a hole or enclosure 3- incinerator Note type:		4-burial 5 dumping in pit larine or oher secure pit 6-dumping in an unsupervised area	
Disposal site is well secured or supervised	1-yes	2-no	3-cannot be assessed	

Adapted from WHO SIGNS tools 2001, 2002

INSTRUMENT 1: GUIDE FOR FOCUS GROUP DISCUSSIONS ON INJECTIONS (PATIENTS AND COMMUNITY)

This focus group guide is used for both patients and community members. The patient focus group consists of patients either waiting to be treated at a health facility or just leaving. The community focus group consists of members selected from households in the community (see moderator guide). It is suggested that group members in each type of focus group should be of the same sex and cultural background.

OBJECTIVES OF THE FOCUS GROUP DISCUSSION

(1) To explore the social and cultural meaning of injections
(2) To identify the people's perception of the therapeutic rationale behind the injections
(3) To understand the direct and indirect costs of injections
(4) To understand people's perception of injection safety.

GENERAL INFORMATION

Date:

Name of note-taker:

Name of moderator:

Location:

Type, sex and number of respondents:

SUBJECTS TO EXPLORE IN SESSION

The below listed subjects and questions may be explored in any order. If the participants have already covered a subject then there is no need to ask the specific question relating to that subject.

What symptoms will make you seek help from a treatment provider?

- Probe for type of symptoms, perception of severity and cause.
- For which symptoms do you self-medicate?
- Are there symptoms for which you do not take any medication at all? In these cases, do you do something else?

How and why do you choose specific treatment providers?

- Probe for which formal as well as informal providers people choose and why.
- Why this provider was chosen and what type of treatment does he normally give?
- How do you know the qualifications of a specific provider and do these qualifications matter to you?
- Who do you see for getting injections?

How do you determine if a treatment is effective?

- Probe for efficacy in relation to injections

Are there any specific diseases or symptoms for which injections are most effective?

- Probe for which ones and why.

Are some providers better for providing injections than others?

- Please explain how the provider administers the injection

  - Intravenously or intramuscularly
  - Cleaning of site
  - Type of injection equipment used

- Are the reasons for people's preferences:

  - Safety
  - Convenience
  - Skills of the provider
  - Efficacy
  - Cost

What are the reasons for the advantages of injections and IV-fluids?

- Do you prefer injections and/or IV-fluids to other types of treatment?
- How did you form that opinion?
- Probe for who educates people on health, relevant personal experiences or other local sources of health information.

How do the direct costs (for instance provider fee) and the indirect costs (for instance cost of travel to provider) compare to the cost of other types of therapy?

- Indicate cost of prescription with injection compared to prescription without injection.

If injections are more expensive then probe for :

- Why people prefer injections, for instance perceptions of injections being a quicker cure and therefore worth more money/effort

- How often people travel for injections vs. how often they travel for other therapeutic treatment

How do you think the injection prescribers decide on whether or not to give an injection?

- Who initiates the injection in the therapeutic encounter, patient or provider?
- Probe for people's perception of the prescribers' therapeutic rationale.
- Do people request injections from the prescriber?
- Do these requests influence the prescriber?

Are there any risks associated with injections or circumstances where injections should not be given? How can you avoid these risks?

- Probe for what they are, for instance jaundice, HIV, hepatitis B or C, abscesses
- How people know about these risks and what they do to prevent them
- What makes an injection dangerous:
    - Inadequate provider skills
    - Inadequate cleaning procedure (please describe how cleaning is done)
    - Reuse of equipment instead of using disposable syringes
    - Sharing of injection equipment among patients or family members

Have there been times when people in this area received too many or bad injections?

Probe for examples, from which providers and reasons for the bad quality.

Are there differences in men, women and children receiving injections (not immunisations)?

- Probe for differences in prescribing patterns and perceived gender/age based reactions to injections.
- Are there circumstances (age groups or symptoms) where injections should not be given?

Do people have their own injection equipment for use in health facilities or at home?

If yes, probe for reasons:

- Why people have their own equipment. What type of injection equipment is it (disposable, reusable)
- Where they obtain it?
- If it is disposable syringes, how do people know that it is new? (Is it opened in front of the patients?)
- How they sterilize it if not disposable?
- Do people prefer a certain type of equipment for injections, for instance plastic or metal?
- Ask whether providers discuss people's sterilization practices with the patients
- What happens to disposable syringes after use?

Do people get injections outside health facilities? If yes, where and why does this happen?

Probe for:

- Who gets these injections?
- Who administers them (Relative, dispensary, traditional healer, hospital, other)?
- What are the conditions?

- Why this treatment or provider is chosen?

What do you think happens to syringes and needles after they have been used and discarded?

- Do you see used syringes lying around on tables and floors of health facilities?
- Can they be found in your environment?
- Do they lead to needle stick?
- Are needle sticks risky and why?

Do you have any suggestions for how injection practices can be improved in your community?

- Probe for credible sources of future health information (providers, teachers, religious figures etc.)

INSTRUMENT 5: EXIT INTERVIEW FOR PATIENTS

If it is difficult to conduct focus group discussions with patients in the waiting rooms of private doctors, then an exit interview can be chosen instead. An exit interview means that an interviewer interviews a number of patients, one at a time, as they leave the health care facility. It is important to do so out of sight of the doctor or provider so those patients can speak freely. Certain criteria can be employed in selecting patients for exit interview, for instance every third patient should be interviewed or a certain number of men and a certain number of women should be interviewed.

The research advantage of an exit interview is that the interviewer can ask questions about the therapeutic interaction that just took place. This enables the patient to give very concrete answers in additions to the general opinions. This may facilitate contact and insights into common injection practices. Exit interviews can provide an easy way of collecting baseline information before interventions. They can be repeated at regular intervals to measure changes in the number of patients who receive an injection or IV fluid (or other relevant indicators).

GENERAL INFORMATION

Date:

Name of note-taker:

Name of moderator:

Location:

Type of respondent:

SOCIO-ECONOMIC INFORMATION

- What is your age?
- Gender and ethnicity if possible:
- Did you ever go to school and to what grade?
- What work do you do?
- What brought you to a doctor?

TREATMENT JUST RECEIVED

Do you know about the qualifications of the doctor? If yes, how did you obtain this information? Is this important for you?

What treatment did the doctor prescribe?

- Ask about the treatment procedures that he/she has experienced in the facility

What was the total cost of the treatment?

- Probe: cost of medicine, doctor, time cost, distance covered and time spent

If injection is mentioned as part of the treatment then ask about the cost of the injection.
If injection is not mentioned or was not given in the just received treatment, then ask that whether injections have been received before:

- Who suggested for injection? (Doctor/himself or herself)
- Probe: Why
- Who gave you the injection?
- Where did the syringes come from and what type was it?
- Was the syringe new or used? Was it opened in front of you?
- Is cleaning of the syringes equipment is required? How does this normally take place?
- Are you satisfied with the injection procedure?
- How the dispenser administered the injection?
    - Intravenously
    - Intramuscularly
    - Cleaning of site of injection
- In your opinion how should the syringes be cleaned?
- Did you see used syringes lying around in the clinic?
- Probe: on floor, tables, in waste-basket etc

QUALITY OF TREATMENT

Are you satisfied with the treatment?

- Probe: Why or why not?

What in your opinion is good quality treatment?

- Probe: What should be included and excluded in the treatment?

OPINION ABOUT DRIPS / BLOOD PRODUCTS / INJECTION

What is your opinion about giving injections for treatment?

- Probe: Why do you have this opinion?

Can you name the diseases/conditions for which injections should be given?

- Probe: Why

What is your opinion about giving drips for treatment?

- Probe: Why/how

Have you ever been given/taken any drip?

- Probe: For what conditions and why?

In what conditions should drips be given to patients?

- Probe: Why?

HAZARDS AND BENEFITS OF INJECTIONS

Are there any hazards or benefits of injections?

- Probe: What / Why for each hazard and benefit.
- For abscesses and pain etc
- How can you avoid these?

Are there any hazards and benefits of IV-fluids?

- Probe: What / Why for each hazard and benefit.
- How can you avoid these?

Are there any hazards and benefits of taking blood?

- Probe: What/why for each hazard and benefit.
- How can you avoid these?

Have you heard about hepatitis before?

- Probe: If yes, what do you know about it and where did you get the information?

SOURCE OF INFORMATION

From where do you get information on health care? Where do you get most of the information about injection use and its benefits and hazards?

FACILITY INFORMATION

Why do people come for treatment to this facility compared to elsewhere?

- Probe: advantages and disadvantages/cost/ reason of preference

Do they go anywhere else?

- Probe: Why and when?

SUGGESTIONS FOR IMPROVEMENT

Do you have general suggestion for improvement in the quality of treatment/health care in your community?

Do you have any suggestions for improvement for injection use?

- Probe: when should injections be used or when not?
- How should used syringes be cleaned? Please explain the cleaning procedures.

Ask whether the patient has any questions regarding anything

ANNEX B

Monitoring and Evaluation Tools

PREVENTION OF MEDICAL TRANSMISSION OF HIV – INJECTION SAFETY

Monitoring and Evaluation form/checklist

Name and type of health facility: ----------District/town: ----------

Department/Ward: ----------Date of monitoring: ----------

Names of monitors: ----------

Number of Health staff- facility/department/ward: ----------

Profession and position: MD: ---------- Nurses: ---------- Clinical Officers: ----------

Environmental Health Technicians: ---------- CDEs: ----------Lab. Tech.----------

Dental Tech/Therapist: ----------

Number trained in IP/IS: ----------

Checklist 1: Observation of equipment and supplies availability at the facility

	Assessment items 1) For items not observed leave blank 2) Items in bold are of higher importance	Circle either Yes or No		Remarks
1	**Stock of syringe and needles adequate to prevent stock outs?**	Y	N	
2	Sufficient number of puncture resistant safety boxes in stock?	Y	N	
3	Presence of sharp boxes in ALL areas where any injection is given	Y	N	
4	**Presence of overflowing, pierced or open sharp containers inside facility**	Y	N	
5	Full sharps box (es) for disposal/incineration are properly closed & stored in locked/secure areas inaccessible to the public	Y	N	
6	Sharps waste in open containers, tables, floors or other places exposing staff to needle stick injuries	Y	N	
7	Used syringe and needles present outside the HC or disposal site i.e. not completely buried or incinerated into ashes	Y	N	
Bulk stores at hospitals district health management board and health centres				
1	Bin cards on all supplies	Y	N	
2	All bin cards are updated on daily basis	Y	N	
3	Requisitions from the wards are on formal requisition document.	Y	N	

4	Documents are kept properly	Y	N	
5	Supplies are available	Y	N	
6	Are the staff happy with the services of stores	Y	N	
	Other specify/suggestions	Y	N	

Procurement departments at the Hospital and the DHMT				
1	Is there any proof that other members of staff are involved in procurement of goods and services e.g. Product selection and quantification	Y	N	Remarks
2	Are other members of staff happy with the services of procurement	Y	N	
3	What do members staff want procurement to do in order to improve the services			
Other specify/suggestions				
Wards at the Hospitals and Health Centres under DHMT				
1	The supplies are readily available at the point of use	Y	N	
2	The ward has bin cards for each item or accountability books for supplies	Y	N	
3	The patients appreciates the availability of supplies	Y	N	
4	What do the members of staff want management to do to improve services			
Other specify				

Checklist 2: observation of injection practices (observe one provider per dept/ward)

	Assessment items 1) For items not observed leave blank 2) Items in bold are of higher importance	Circle either Yes or No		Remarks
1	Preparation on a clean designated table or tray where blood or body fluid contamination is unlikely	Y	N	
2	Use of a new syringe and needle from sterile packets	Y	N	
3	Removal of all needles from the vaccine/medicine vial between injections	Y	N	
4	Use of a new sterile syringe an needle to reconstitute each vial	Y	N	
5	Two hand recapping of a used needle	Y	N	
6	Use of hand rub before washing hands	Y	N	

7	Wash hands with soap before injecting /other procedures?	Y	N	
8	Use a sterile needle and syringe for every injection?	Y	N	
91	Leave a needle inserted in a vial cap to withdraw multiple doses?	Y	N	
10	Administer the injection correctly?	Y	N	
11	Bend or break needles prior to disposal?	Y	N	
12	Manually remove the used needle from the syringe?	Y	N	
13	Decontaminate by flushing with 0.5 percent chlorine solution three times?	Y	N	
14	Set down the syringe and needle before disposing of them?	Y	N	
15	Putting all sharps in puncture proof safety box immediately after use	Y	N	
Other specify/suggestions for improvement				

Checklist 3: Interview of injection provider (10 minutes)

	Assessment items 1) For items not observed leave blank 2) Items in bold are of higher importance		Provider 1		Provider 2		Provider 3	
			B. Circle either Yes or No					
1	Did you have any needle-stick injury in last 6 months		Y	N	Y	N	Y	N
2	Mention specific common diseases that are transmitted to provider and patients by unsafe injections	HIV	Y	N	Y	N	Y	N
		HBV	Y	N	Y	N	Y	N
		HCV	Y	N	Y	N	Y	N
3	Have you been vaccinated against hepatitis B		Y	N	Y	N	Y	N
4	Are CDEs provided with PPEs		Y	N	Y	N	Y	N

Checklist list 4: Interview of the local health centre in charge/injection supervisor/IP focal person/ of the Health facility

	Assessment items 1) For items not observed leave blank 2) Items in bold are of higher importance	Circle either Yes or No		Remarks
1	Can you show me a printed copy of the latest national infection guideline (check for the copy)	Y	N	
2	Is there a functioning IP/IS committee- check for minutes	Y	N	
3	Have you made any BCC materials for IP/IS (check posters, job aids, stickers, flyers etc)	Y	N	

4	Did you have meetings with NHC/HCC on IP/IS	Y	N	
5	Was the briefing of other staff done- check for minutes	Y	N	
	Did you hold an orientation for maids (check evidence)	Y	N	
6	In last 4 months have you ever experienced stock out of the following: syringes	Y	N	
	Needles	Y	N	
	cannulas	Y	N	
	JIK	Y	N	
	Glove; surgical	Y	N	
	Utility	Y	N	
	Examination	Y	N	
	Safety boxes	Y	N	
C. Other specify				

Notes on monitoring

Step-by-step approach to supervision

Step 1: Observe injection practices

1. Lack of equipment and supplies
2. Lack of awareness
3. Lack of sharp management.

Step 2: Evaluate injection practices

Evaluate the observed practices against the "best practice". This is the starting point for discussing any weaknesses.

It is important to note the areas of high performance (strengths). Praise and acknowledgement reinforces good practices and makes team members more open to guidance in their areas of weakness

Step 3: The key step is to provide feedback to reinforce the good practices, and help Correct to poor ones. Use the strengths and weaknesses of the current practices to discuss the way forward and finally come up with a plan of action for the team.

Procurement

The project has embarked on procurement of supplies to fill the shortages the institutions have been experiencing and also enforce good procurement practices. These shortages of supplies and bad procurement practices have contributed to the bad injection safety practices.